

- NOTES:
1. ALL MANHOLES MUST BE A MINIMUM OF 4' IN DEPTH.
 2. PROVIDE POURED CONCRETE INVERTS AND DOGHOUSES.
 3. MARKING POSTS SHALL BE SUPPLIED BY THE CITY AND INSTALLED BY THE CONTRACTOR AT ALL MANHOLES LOCATED OUTSIDE OF STREET SECTION.
 4. VARY RING THICKNESS TO USE MINIMUM NUMBER OF RINGS.
 5. GROUT ALL DOGHOUSES INSIDE AND OUT AND LIFT HOLES TO INSPECTORS APPROVAL.
 6. DOGHOUSE OPENING SHALL NOT BE MORE THAN 4" LARGER THAN THE PIPE.
 7. RUBBERIZED BITUMASTIC SEALER USED AT ALL JOINTS.
 8. NO MANHOLE STEPS ALLOWED.
 9. 2", 4" AND 6" ADJUSTING RINGS ARE ACCEPTABLE.

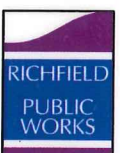
STANDARD
DETAIL NO.
STM-01

STORM STANDARD MANHOLE

APPROVAL

12/16 2014
[Signature]
CITY ENGINEER

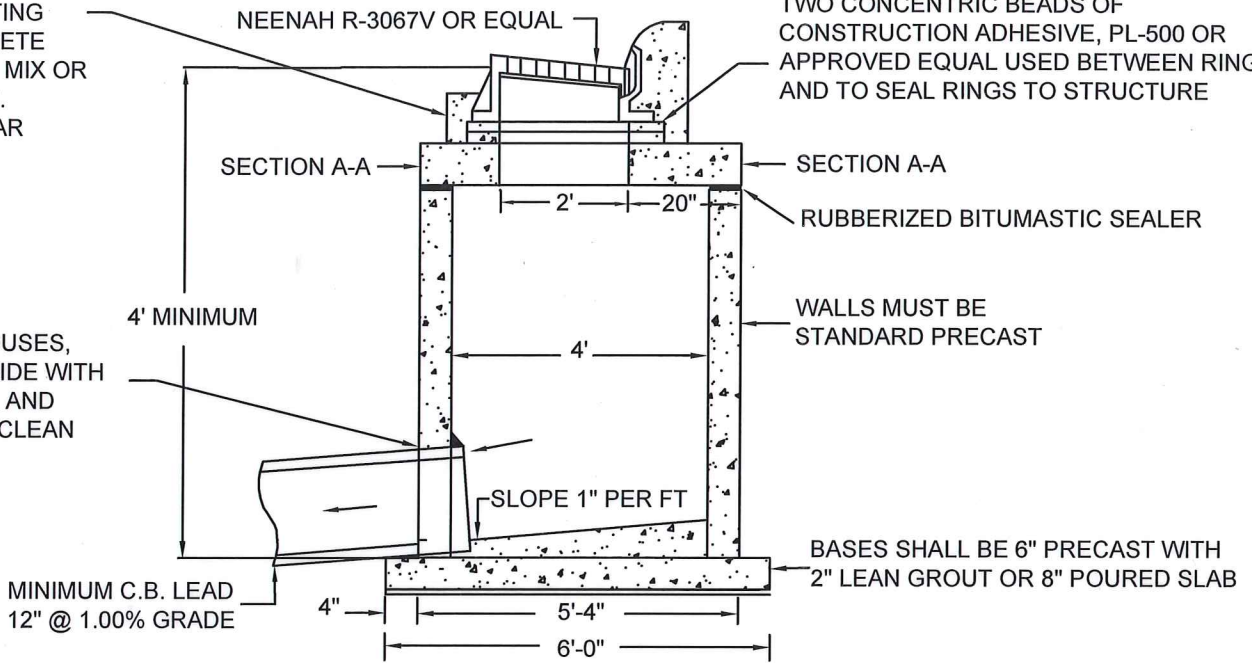
CITY OF RICHFIELD
ENGINEERING DIVISION



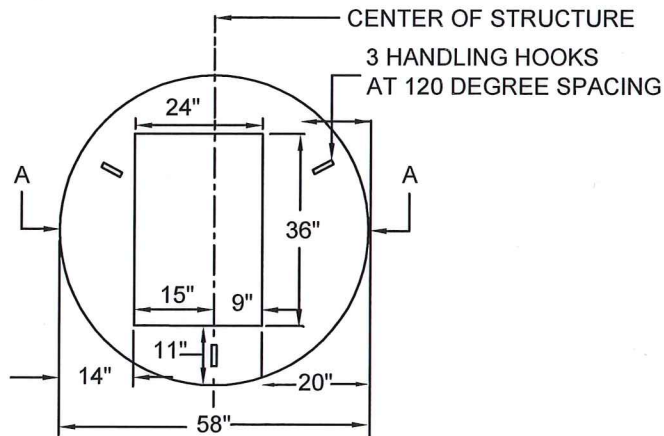
CONCRETE COLLAR TO ENCASE CASTING AND CONCRETE ADJUSTING RINGS. USE CONCRETE CURB AND GUTTER MIX OR MORTAR MIX (SPEC. 2506.2B) FOR COLLAR

MIN OF 1 AND MAX OF 4 ADJUSTING RINGS. TWO CONCENTRIC BEADS OF CONSTRUCTION ADHESIVE, PL-500 OR APPROVED EQUAL USED BETWEEN RINGS AND TO SEAL RINGS TO STRUCTURE

GROUT DOGHOUSES, PLASTER OUTSIDE WITH 6" MIN. COLLAR AND STRIKE INSIDE CLEAN



SECTION



PLAN

- NOTES:
1. ALL CATCH BASIN/MANHOLES MUST BE A MINIMUM OF 4' IN DEPTH.
 2. PROVIDE POURED CONCRETE INVERTS AND DOGHOUSES.
 3. GROUT ALL DOGHOUSES AND LIFT HOLES TO INSPECTORS APPROVAL.
 4. DOGHOUSE OPENING SHALL NOT BE MORE THAN 4" LARGER THAN PIPE.
 5. NO MANHOLE STEPS ALLOWED.
 6. 2", 4" OR 6" ADJUSTING RINGS ARE ACCEPTABLE.
 7. CATCH BASIN/MANHOLES WITH FLAT TOP SLABS SHALL HAVE TERMINATING MANHOLE SECTIONS.
 8. SPECIFICATIONS FOR CATCH BASIN, MANHOLE SECTIONS, COVER AND SLABS SHALL CONFORM TO MANHOLE DETAIL.

STANDARD
DETAIL NO.
STM-02A

**CATCH BASIN/MANHOLE
WITH RECTANGULAR LID
(4' DIAMETER)**

APPROVAL

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CITY OF RICHFIELD
ENGINEERING DIVISION



CONCRETE COLLAR TO ENCASE CASTING AND
CONCRETE ADJUSTING RINGS. USE
CONCRETE CURB AND GUTTER MIX OR
MORTAR MIX (SPEC. 2506.2B) FOR COLLAR

NEENAH R-3067V OR EQUAL

MIN OF 1 AND MAX OF 4
ADJUSTING RINGS.
TWO CONCENTRIC BEADS OF
CONSTRUCTION ADHESIVE,
PL-500 OR APPROVED EQUAL
USED BETWEEN RINGS AND TO
SEAL RINGS TO STRUCTURE

VARIES

GROUT DOGHOUSES,
PLASTER OUTSIDE WITH
6" MIN. COLLAR AND
STRIKE INSIDE CLEAN

SLOPE 1"
PER FT

BASES SHALL BE 6" PRECAST
WITH 2" LEAN GROUT OR 8"
POURED SLAB

MINIMUM C.B. LEAD
12" @ 1.00% GRADE

4" 3'-4" 4'-0"

SECTION

- NOTES:
1. ALL CATCH BASIN/MANHOLES MUST BE A MINIMUM OF 4' IN DEPTH.
 2. PROVIDE POURED CONCRETE INVERTS AND DOGHOUSES.
 3. GROUT ALL DOGHOUSES AND LIFT HOLES TO INSPECTORS APPROVAL.
 4. DOGHOUSE OPENING SHALL NOT BE MORE THAN 4" LARGER THAN PIPE.
 5. NO MANHOLE STEPS ALLOWED.
 6. 2", 4" OR 6" ADJUSTING RINGS ARE ACCEPTABLE.
 7. CATCH BASIN/MANHOLES WITH FLAT TOP SLABS SHALL HAVE TERMINATING MANHOLE SECTIONS.
 8. SPECIFICATIONS FOR CATCH BASIN, MANHOLE SECTIONS, COVER AND SLABS SHALL CONFORM TO MANHOLE DETAIL.

STANDARD
DETAIL NO.
STM-02B

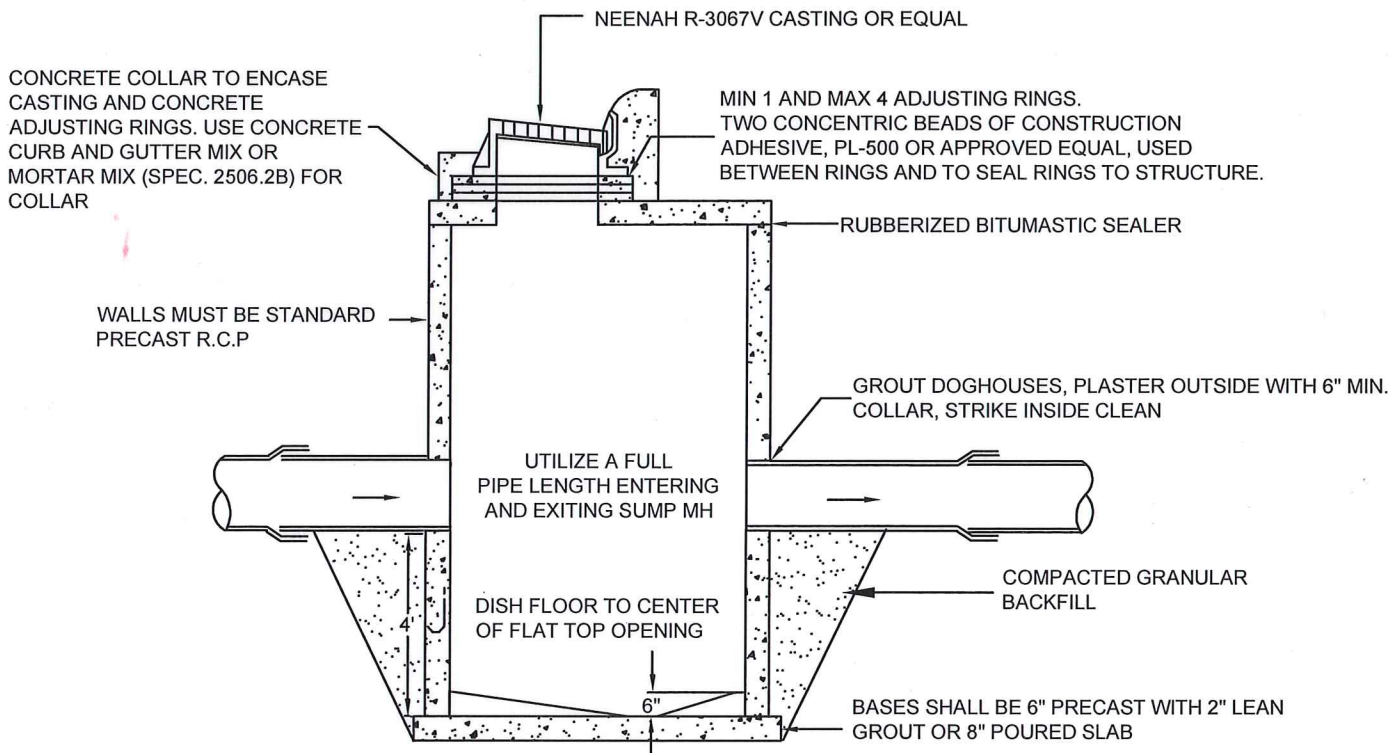
CATCH BASIN/MANHOLE
WITH RECTANGULAR LID
(2' DIAMETER)

APPROVAL

12/16 20 14
[Signature]
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





SECTION

- NOTES:
1. CATCH BASIN/MANHOLE MUST BE A MINIMUM OF 4' IN DEPTH.
 2. CATCH BASIN/MANHOLE WITH FLAT TOP SLABS SHALL HAVE TERMINATING MANHOLE SECTIONS.
 3. SPECIFICATIONS FOR CATCH BASIN, COVER AND SLAB AND MANHOLE SECTIONS SHALL CONFORM TO MANHOLE DETAIL.
 4. PROVIDE POURED CONCRETE INVERTS AND DOGHOUSES.
 5. GROUT ALL DOGHOUSES INSIDE AND OUT AND MANHOLES TO INSPECTORS APPROVAL.
 6. DOGHOUSE OPENING SHALL NOT BE MORE THAN 4" LARGER THAN PIPE.
 7. NO MANHOLE STEPS ALLOWED.
 8. 2", 4" AND 6" ADJUSTING RINGS ARE ACCEPTABLE.

STANDARD
DETAIL NO.
STM-03

SUMP MANHOLE OR CATCH BASIN

APPROVAL

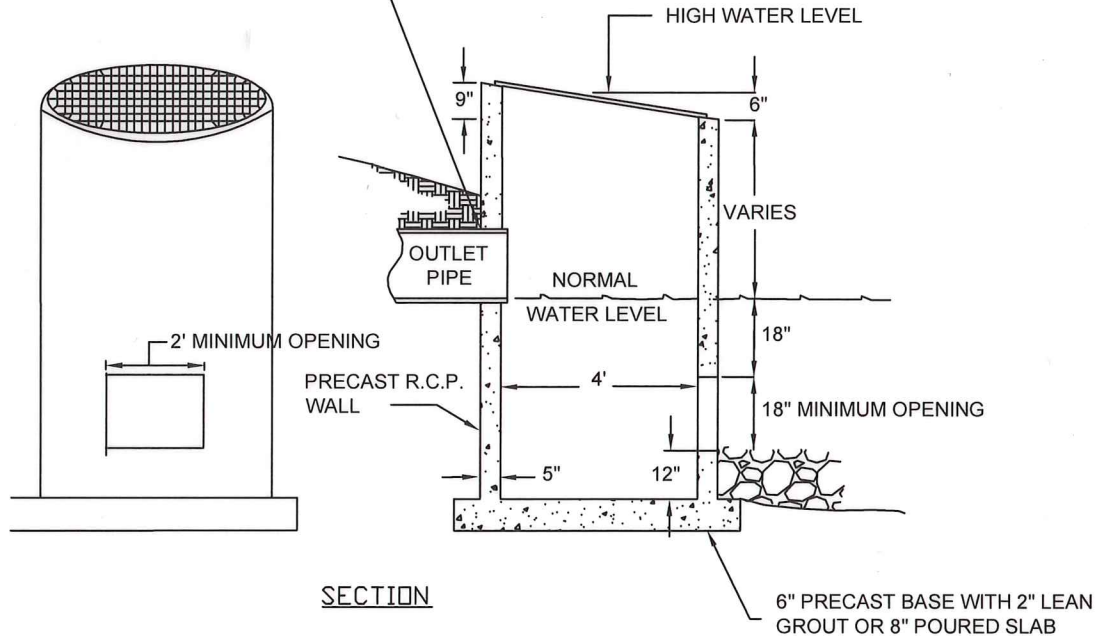
12/16/2014

[Signature]
CITY ENGINEER

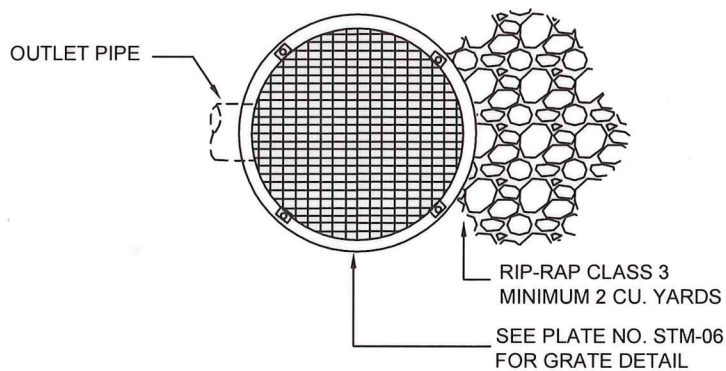
CITY OF RICHFIELD
ENGINEERING DIVISION



GROUT ALL DOGHOUSES,
PLASTER OUTSIDE WITH 6" MIN.
COLLAR, STRIKE INSIDE CLEAN



SECTION



PLAN

- NOTES: 1. PROVIDE POURED CONCRETE INVERTS.
2. GROUT LIFT HOLES.

STANDARD
DETAIL NO.
STM-04

POND SKIMMER OUTLET
(SUBMERGED INLET TYPE)

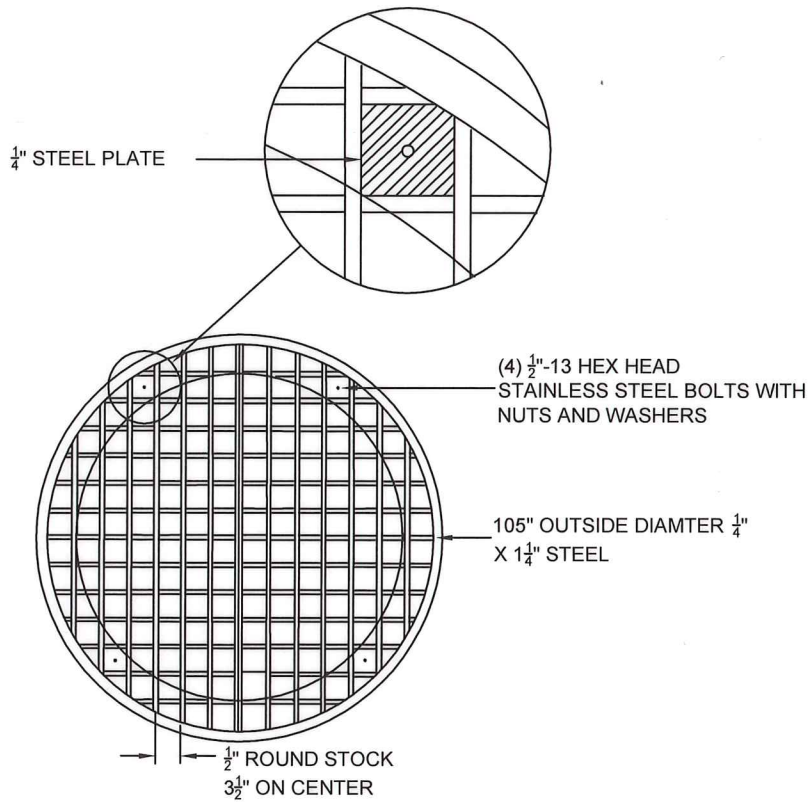
APPROVAL

5/24/2012

CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





- NOTES: 1. GRATE TO BE TWO PIECES.
2. ALL METAL TO BE HOT-DIPPED GALVANIZED.

STANDARD
DETAIL NO.
STM-05

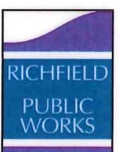
POND SKIMMER GRATE

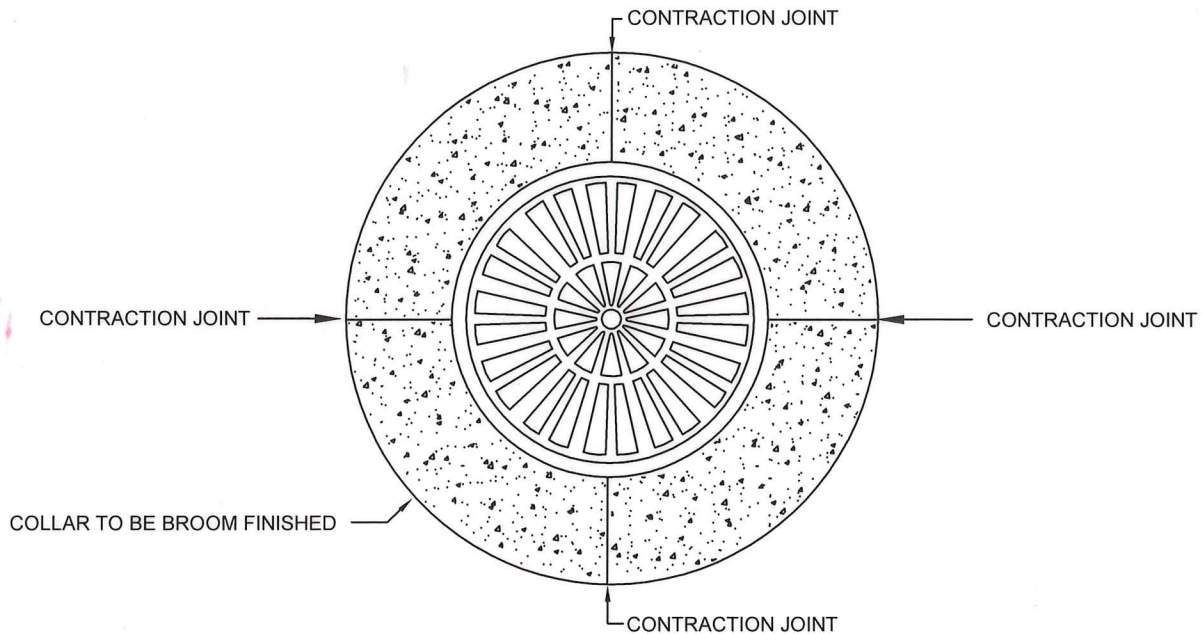
APPROVAL

5/24 2012

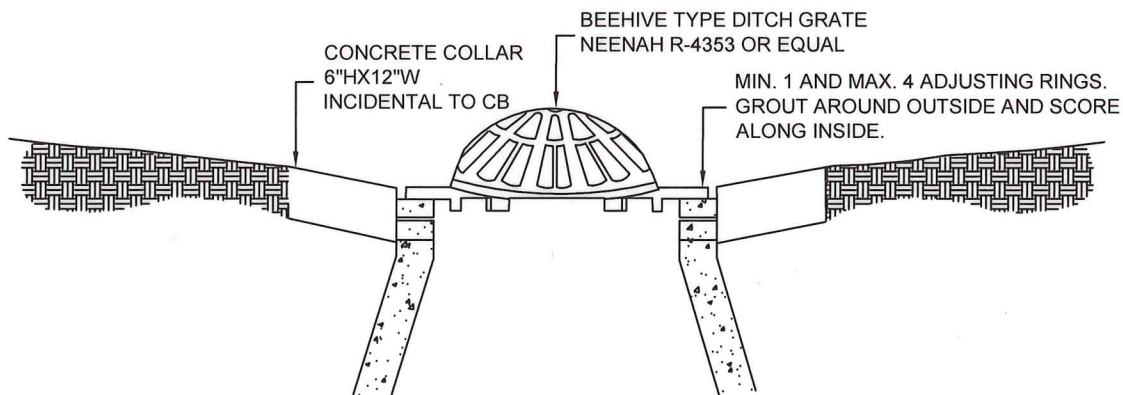
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





PLAN



SECTION

- NOTES: 1. CONCRETE COLLAR MUST HAVE POSITIVE FLOW TO CATCHBASIN.
 2. CONCRETE COLLAR TO BE USED WITH 27" STRUCTURE.
 3. CONCRETE STRUCTURES LARGER THAN 27" TO BE DIRECTED BY THE CITY ENGINEER.

STANDARD
DETAIL NO.
STM-06

DITCH GRATE CASTING AND CONCRETE COLLAR

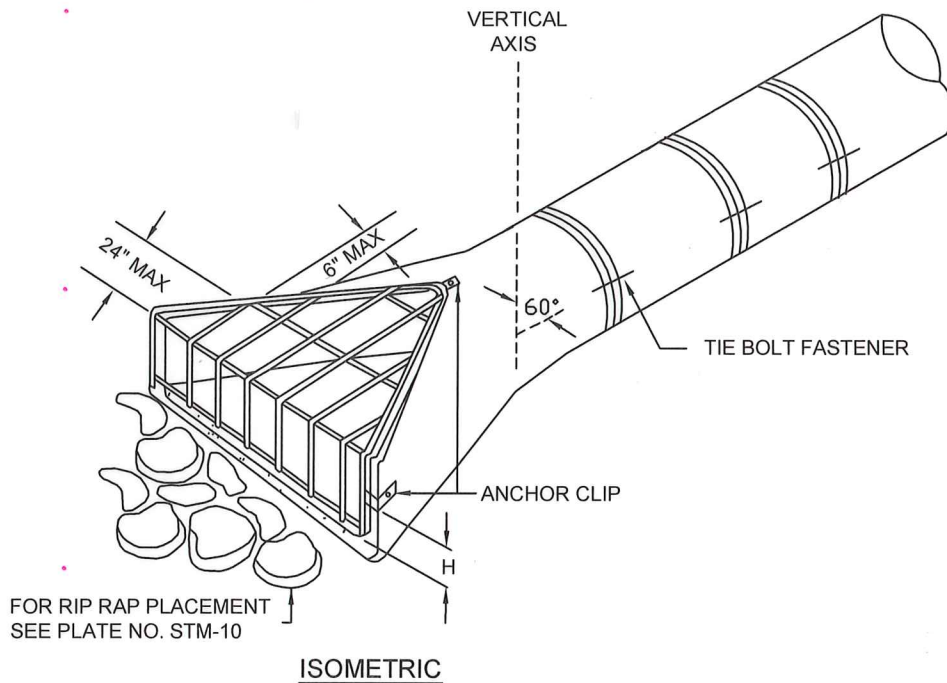
APPROVAL

8/24 2012

[Signature]
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





TRASH GUARD SIZING

PIPE SIZE (IN.)	BOLT DIAMETER (IN.)	BARS (IN.)	H (IN.)
15	5/8	3/4	4
18	5/8	3/4	4
21	3/4	1	6
24	3/4	1	6
27	3/4	1	6
30	3/4	1	6
36	3/4	1	6
42	3/4	1	6
48	1	1 1/4	12

- NOTES: 1. USE TWO TIE BOLT FASTENERS PER JOINT INSTALLED AT 60 DEGREES FROM TOP OF PIPE.
2. LAST THREE JOINTS SHALL BE TIED.
3. TYING AND TRASH GUARD SHALL BE INCLUDED IN THE UNIT PRICE BID FOR END SECTION.
4. BARS AND PLATES ARE HOT-ROLLED STEEL.
5. BARS, PLATES, PIPE AND BOLTS ARE GALVANIZED.

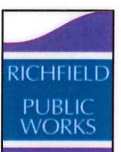
STANDARD
DETAIL NO.
STM-07

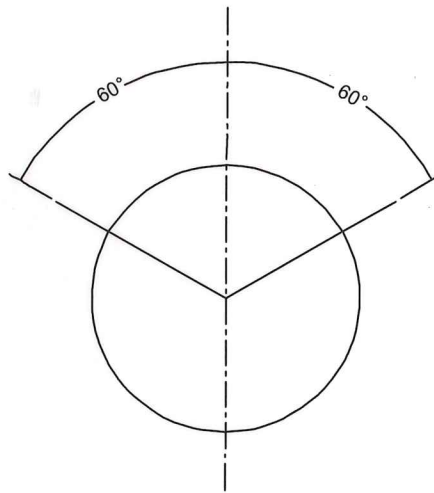
STANDARD FLARED END SECTION AND TRASH GUARD

APPROVAL

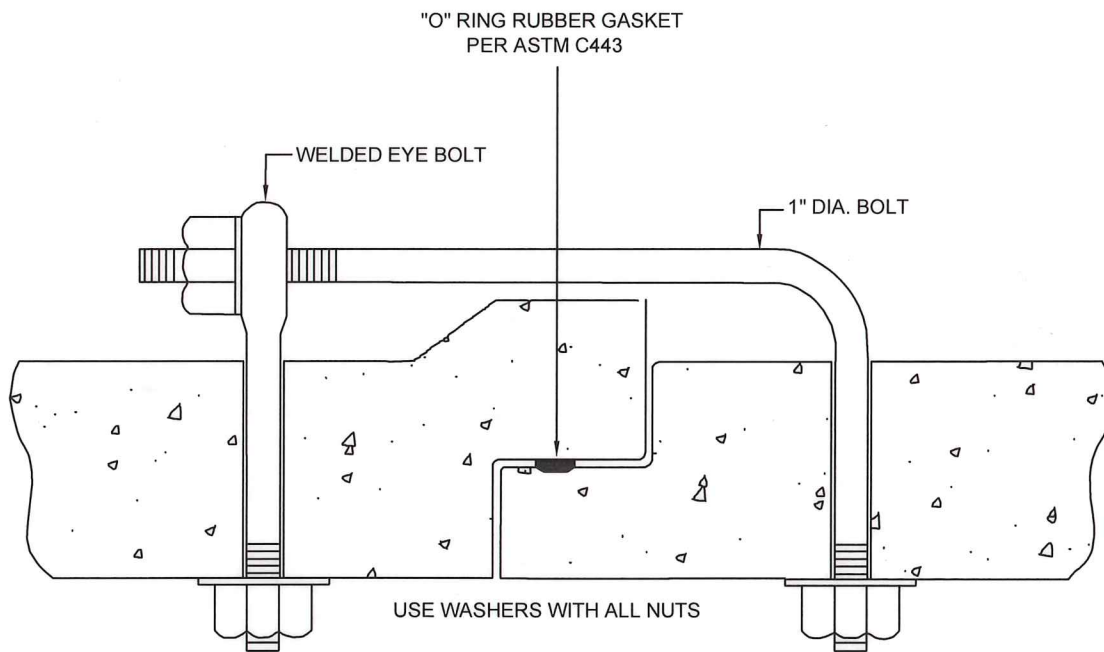
2/27/20
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





TIE PLACEMENT



STANDARD
DETAIL NO.
STM-08

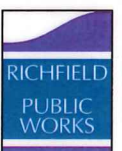
PIPE TIE DETAIL

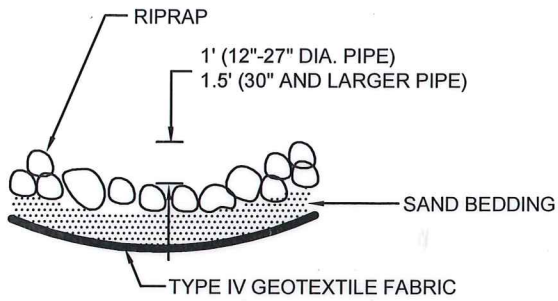
APPROVAL

5/24 2012

CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION

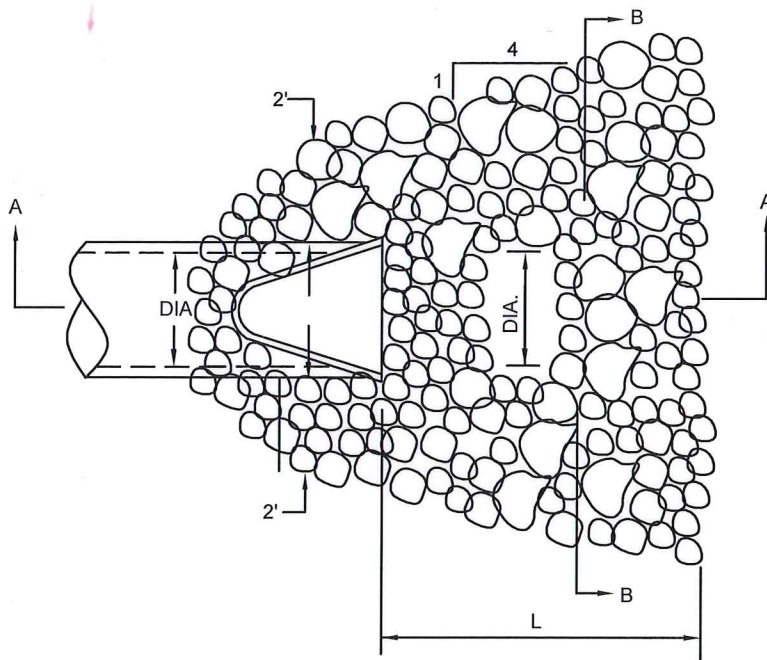




SECTION B-B

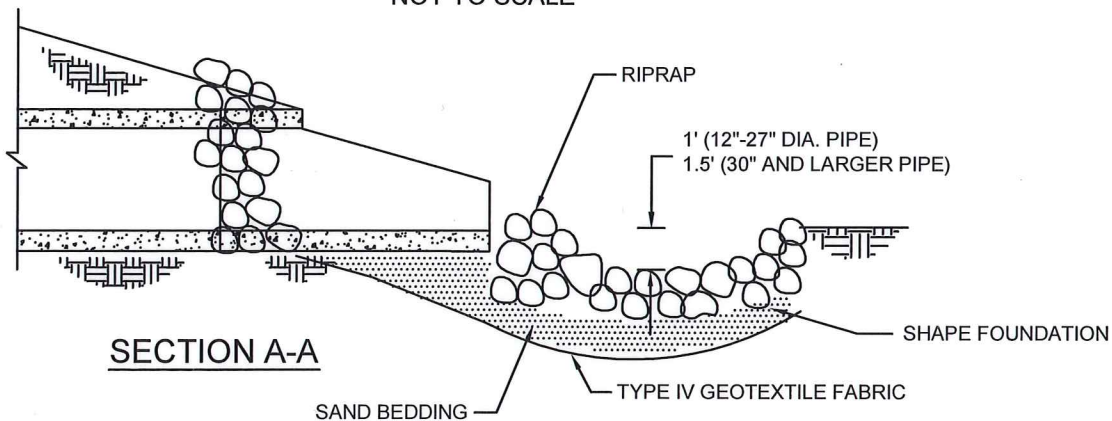
MINIMUM RIPRAP REQUIRED

DIA. OF PIPE (IN.)	L (FT.)	QUANTITY (C.Y.)	CLASS
12	8	5	III
15	8	5	III
18	10	6	III
24	12	8	III
30	14	12	III
36	16	14	III
42	18	22	IV
48	20	26	IV
>48	22-28	30-40	IV



PLAN
NOT TO SCALE

TIE THE LAST 3 JOINTS ON INLET AND OUTLET PIPES AND BED IN GRANULAR MATERIAL. ANY COVER LESS THAN 2' OVER TOP OF PIPE SHALL BE GRANULAR MATERIAL.



SECTION A-A

STANDARD
DETAIL NO.
STM-09

**RIPRAP DETAIL FOR
FLARED END SECTIONS**

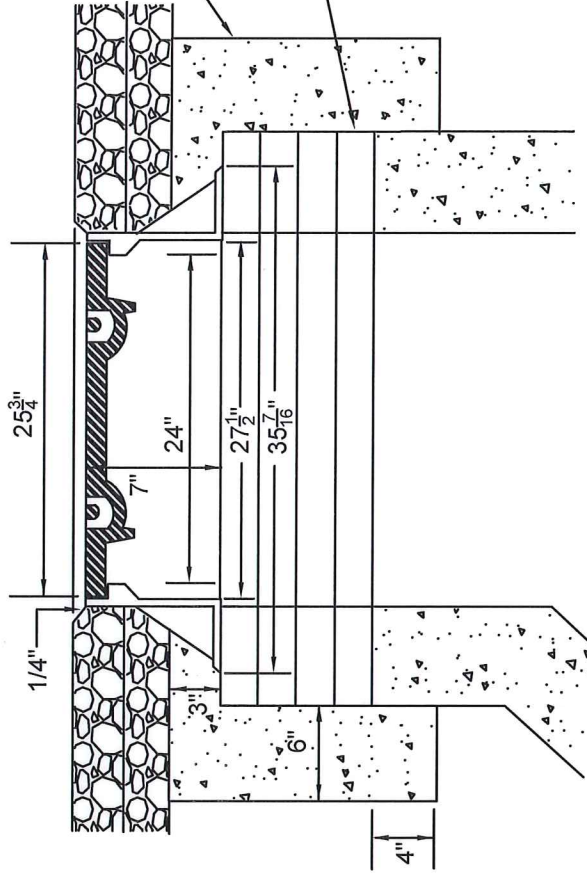
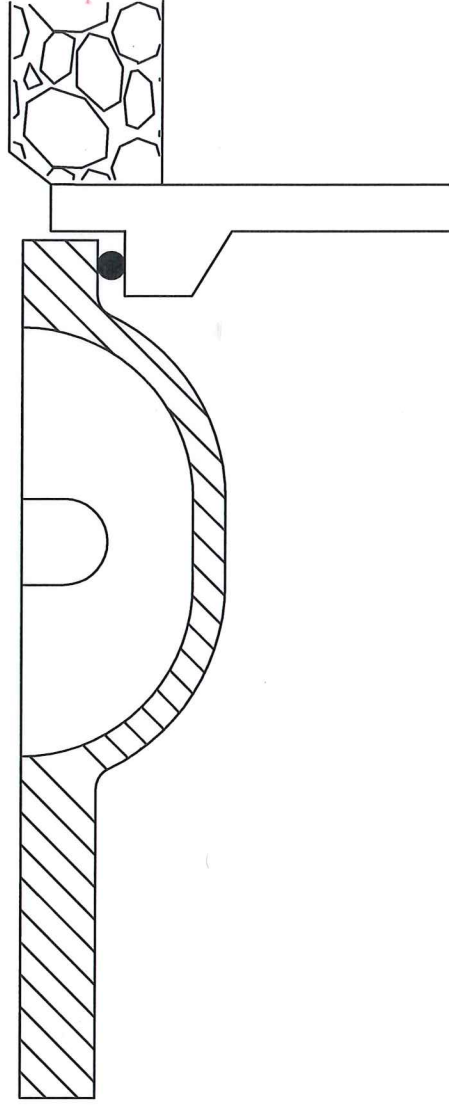
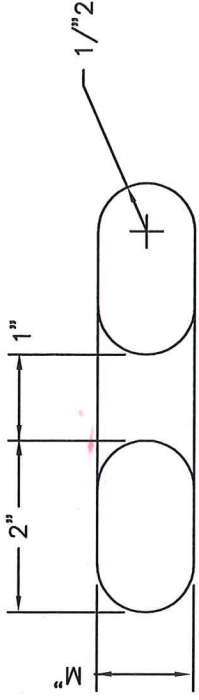
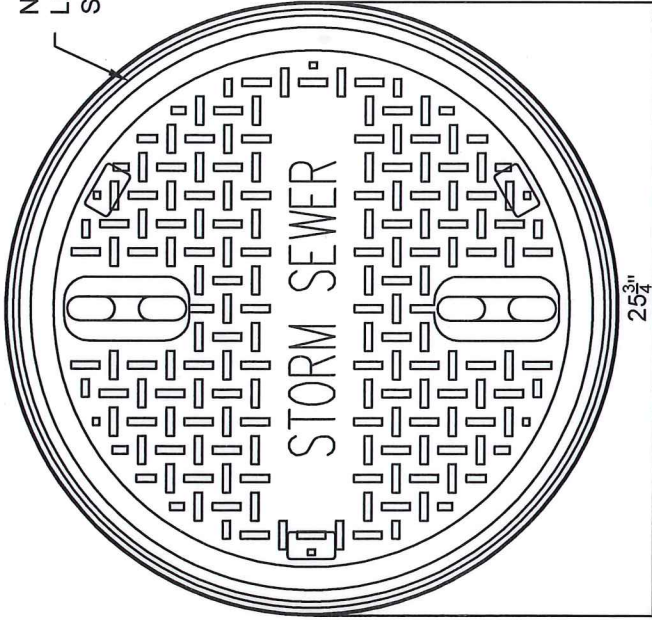
APPROVAL 12/16/2014

CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION



NEENAH R-1733 (5001
LIGHTWEIGHT SELF-
SEALING SOLID LID)



CONCRETE COLLAR TO ENCASE CASTING AND CONCRETE
ADJUSTING RINGS. USE CONCRETE CURB AND GUTTER
MIX OR MORTAR MIX (SPEC. 2506.2B) FOR COLLAR

MIN 1 AND MAX 4 ADJUSTING RINGS. TWO
CONCENTRIC BEADS OF CONSTRUCTION ADHESIVE,
PL-500 OR APPROVED EQUAL TO BE USED BETWEEN
RINGS AND TO SEAL THE RINGS TO THE STRUCTURE.

NOTES: 1. MACHINED BEARING SURFACE.

2. LETTERED 2" STORM SEWER W/ 2 CONCEALED PICKHOES.

3. H-20 LOAD OR GREATER.

4. WEIGHT - 122 LBS.

STANDARD
DETAIL NO.
STM-10A

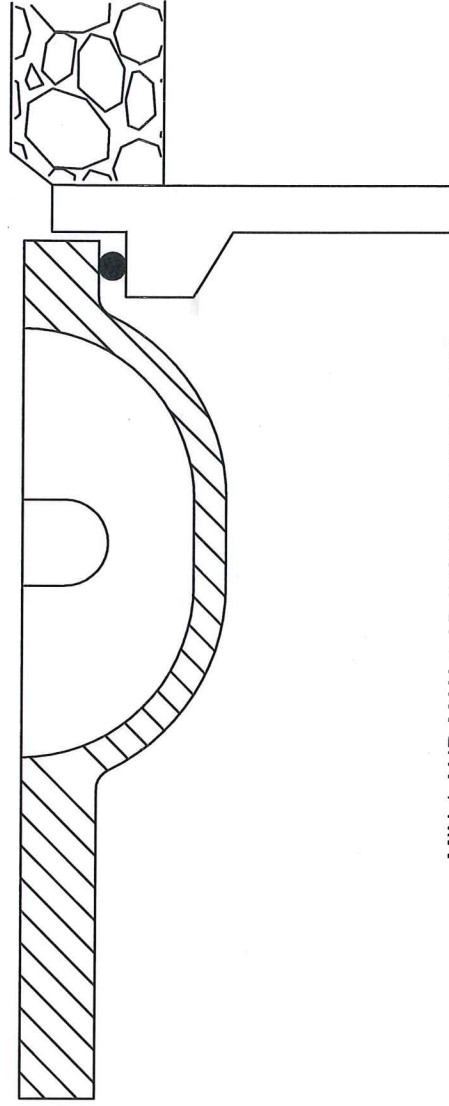
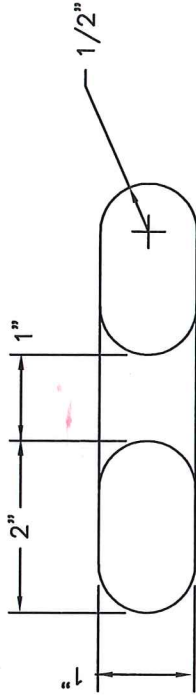
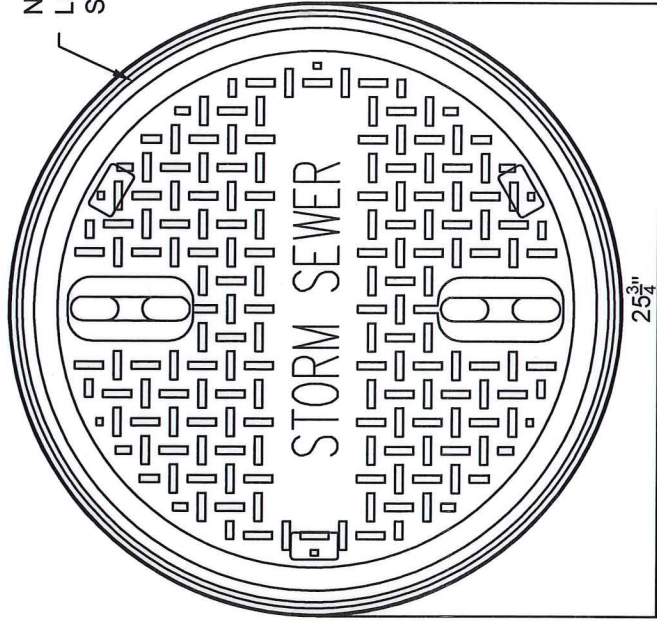
R-1733 SERIES MANHOLE WITH CONCEALED LID (CONE SECTION)

APPROVAL *[Signature]* 20 14
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION



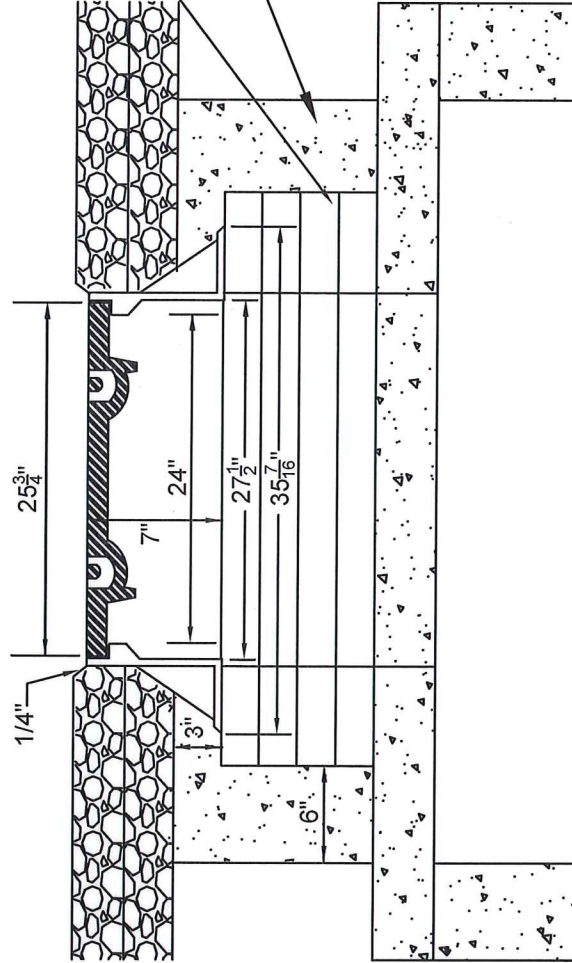
NEENAH R-1733 (5001
LIGHTWEIGHT SELF-
SEALING SOLID LID)



MIN 1 AND MAX 4 ADJUSTING RINGS. TWO
CONCENTRIC BEADS OF CONSTRUCTION ADHESIVE,
PL-500 OR APPROVED EQUAL TO BE USED BETWEEN
RINGS AND TO SEAL THE RINGS TO THE STRUCTURE.

CONCRETE COLLAR TO ENCASE CASTING
AND CONCRETE ADJUSTING RINGS. USE
CONCRETE CURB AND GUTTER MIX OR
MORTAR MIX (SPEC. 2506.2B) FOR COLLAR

- NOTES:
1. MACHINED BEARING SURFACE.
 2. LETTERED 2" STORM SEWER W/ 2 CONCEALED PICKHOES.
 3. H-20 LOAD OR GREATER.
 4. WEIGHT- 122 LBS.



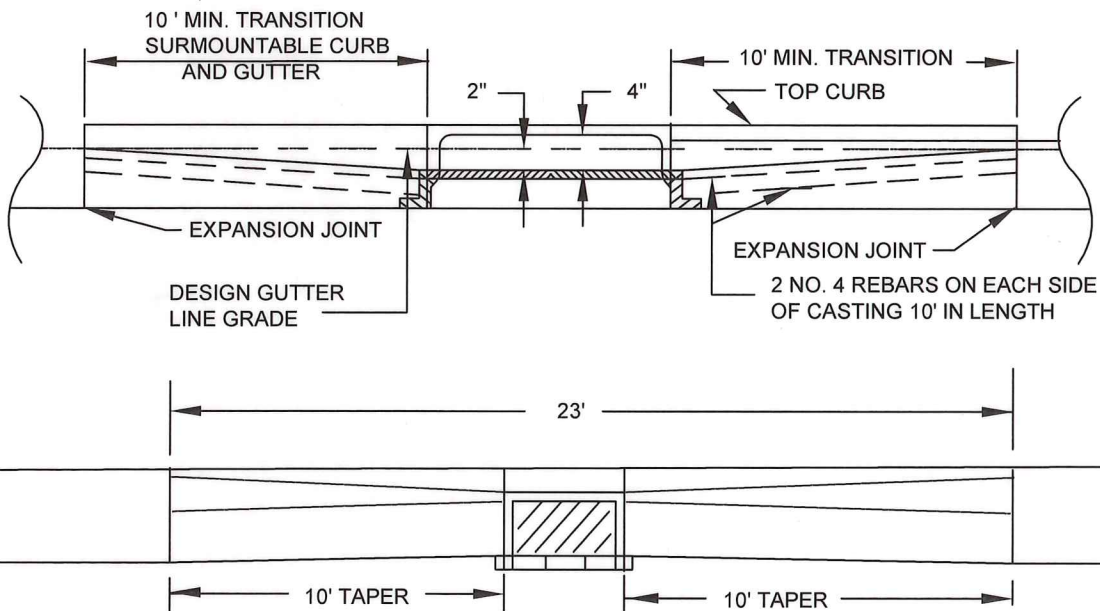
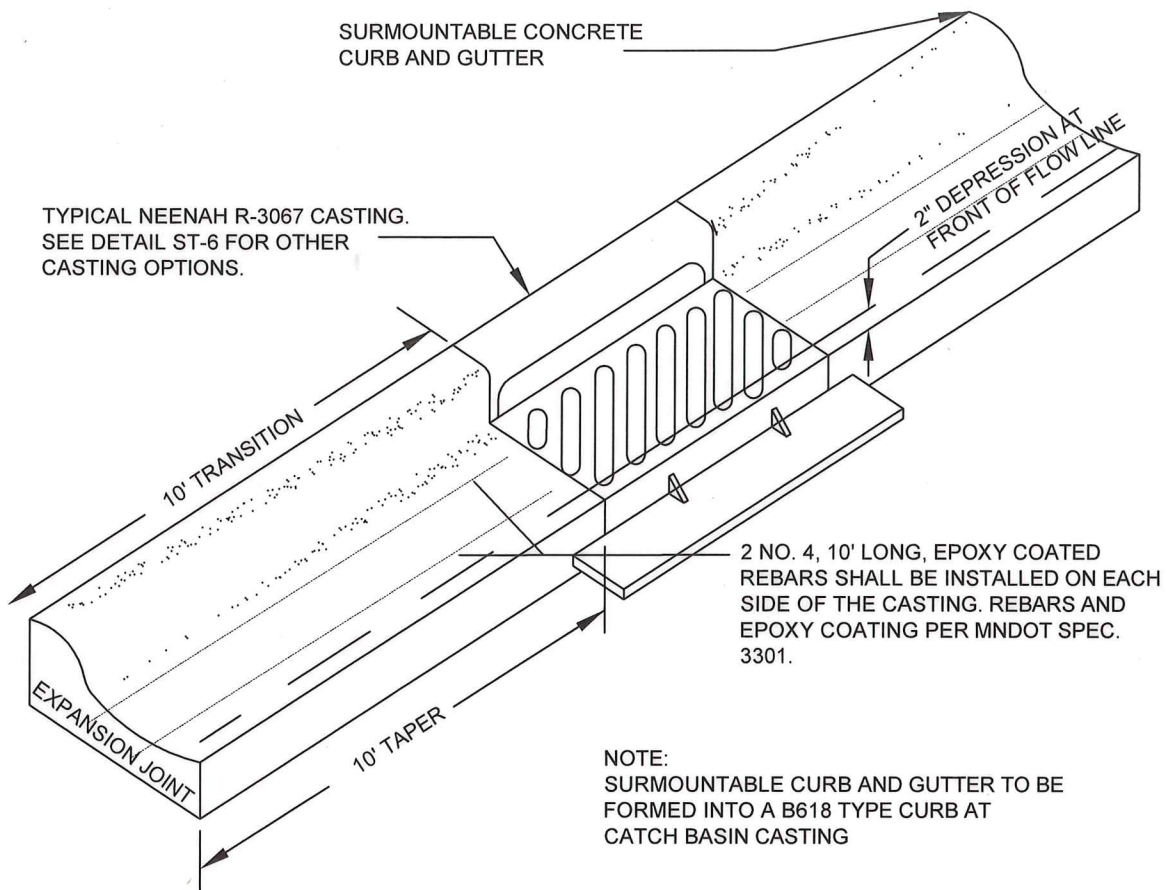
R-1733 SERIES MANHOLE WITH CONCEALED LID (TOP SLAB)

STANDARD
DETAIL NO.
STM-10B

APPROVAL *12/16/20* 20 *14*
[Signature]
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





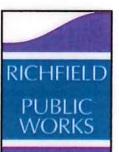
STANDARD
DETAIL NO.
STM-11

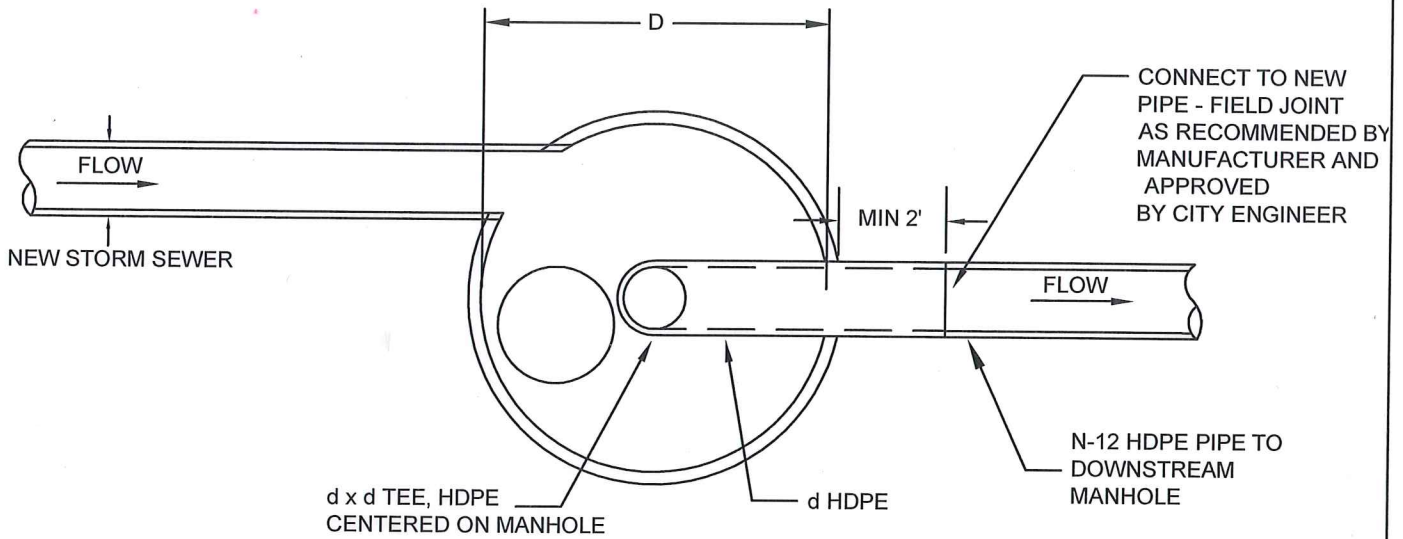
CATCH BASIN CASTING INSTALLATION

APPROVAL

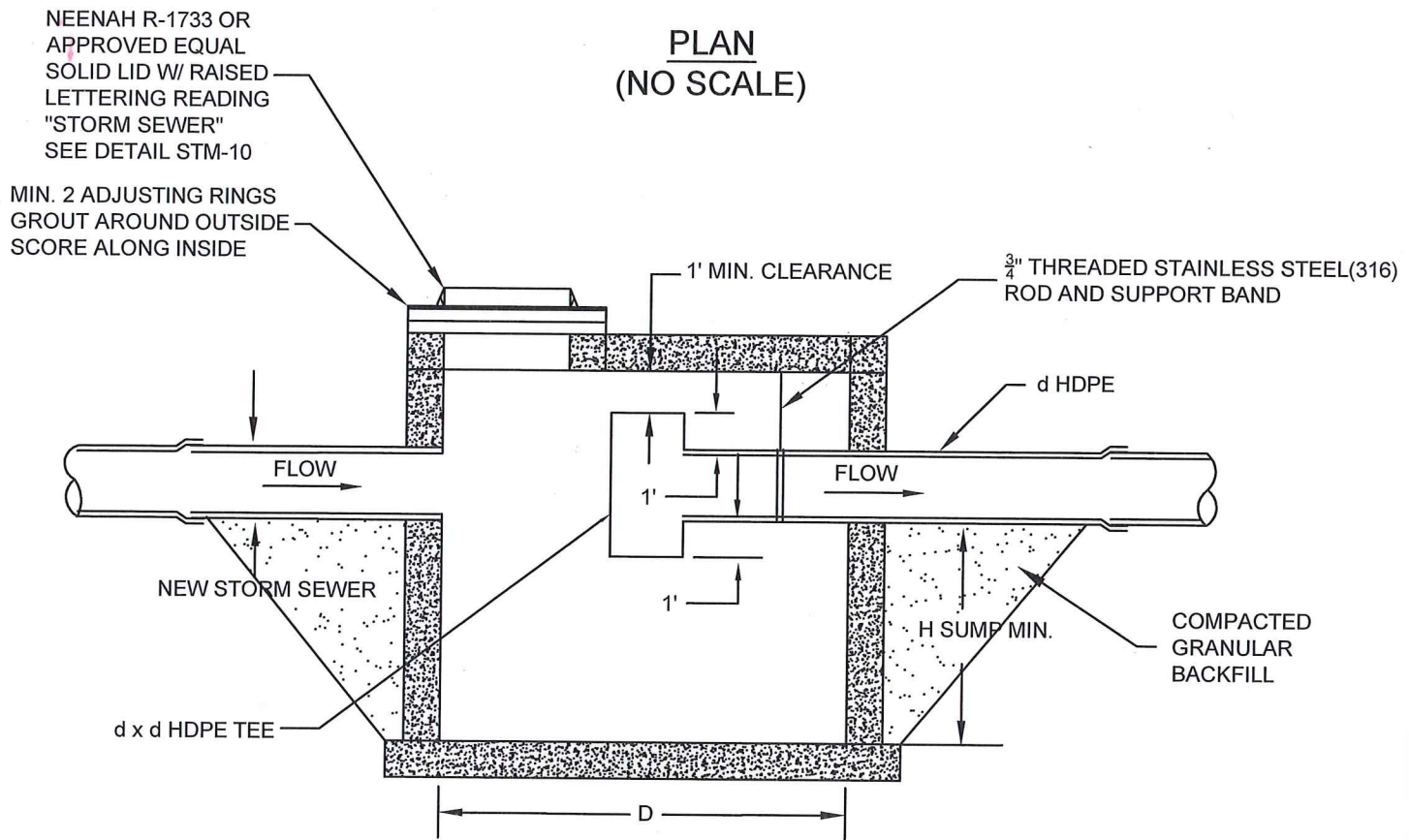
5/24/2012
CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





PLAN
(NO SCALE)



SECTION
(NO SCALE)

NOTE: 1. MANHOLE SHALL BE CONSTRUCTED CONSISTENT WITH CITY STANDARDS SEE DETAIL STM-03

D= TREATMENT MH DIA.	6'	8'	*8'+
d= INTERNAL PIPE DIA.	18"	24"	24"+
H= SUMP DEPTH	5'	6'	6'+
MAX IMPERVIOUS AREA	5 AC	10 AC	>10AC*
MAX STORM SEWER SIZE	18"	24"	>24"AC

* NOTE: OFFLINE CUSTOM DESIGN REQUIRED

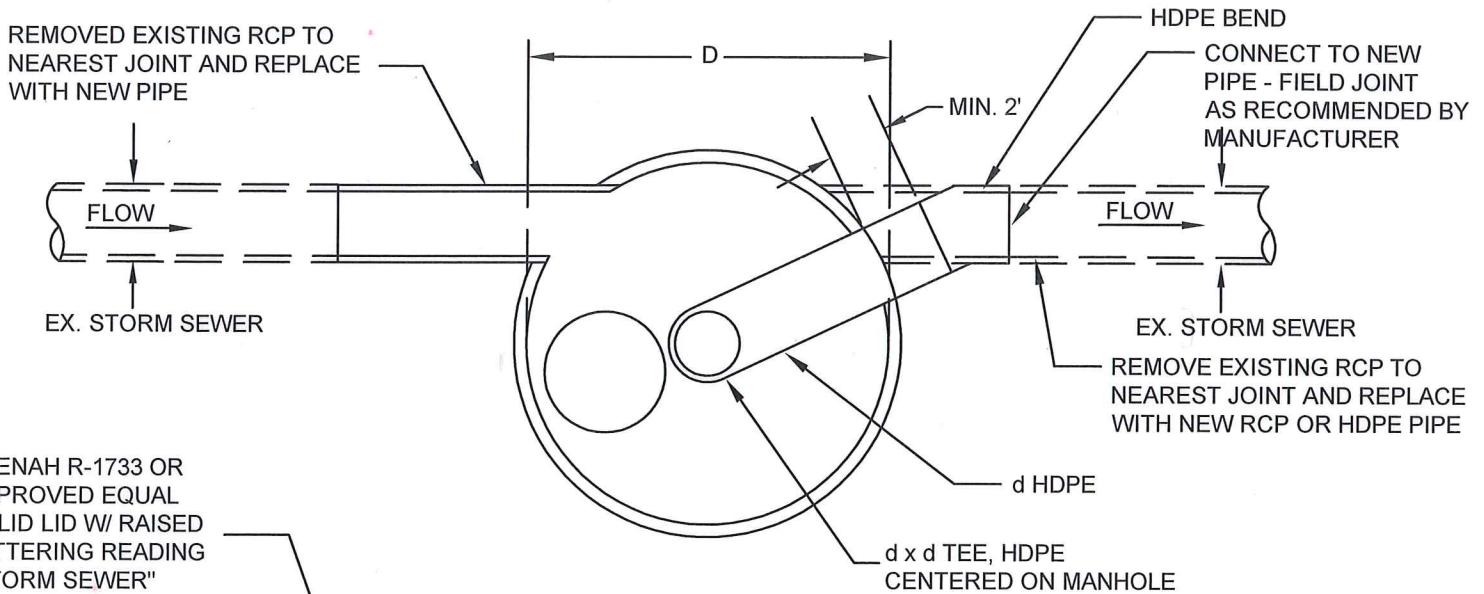
STANDARD
DETAIL NO.
STM-12

**ENVIRONMENTAL
MANHOLE
(NEW STORM SEWER)**

APPROVAL *12/16/2014*
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CITY ENGINEER

**CITY OF RICHFIELD
ENGINEERING DIVISION**

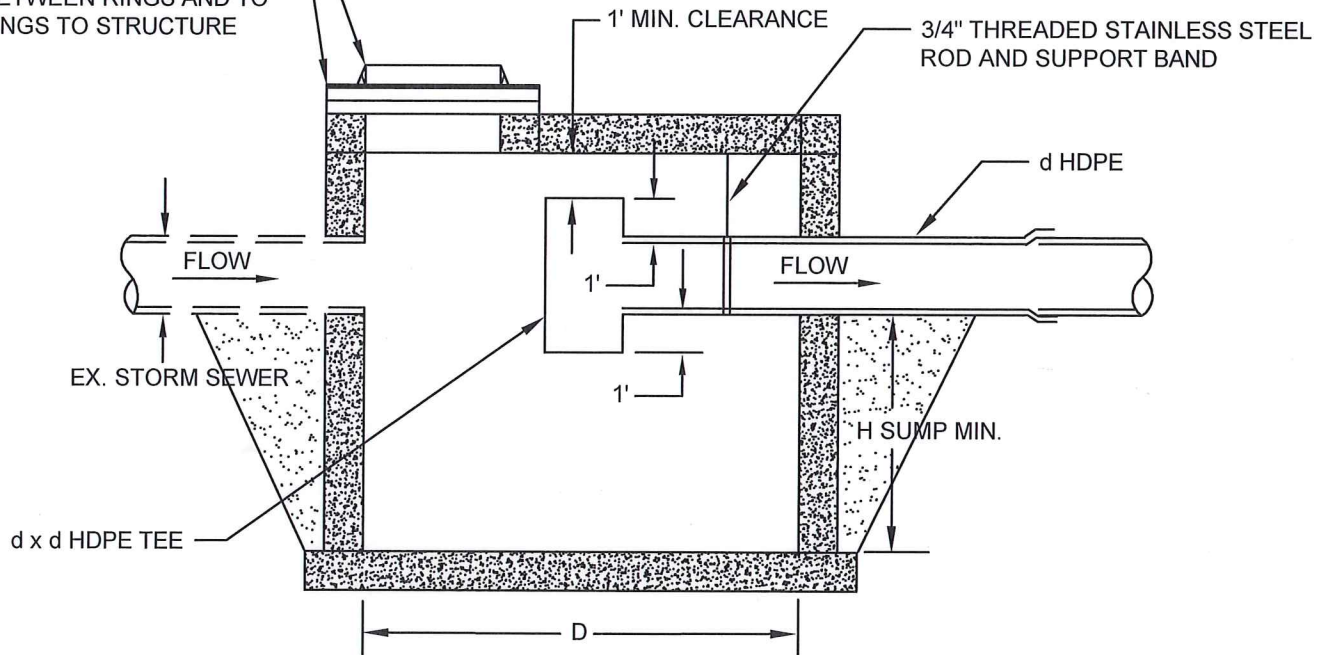




PLAN
(NO SCALE)

NEENAH R-1733 OR APPROVED EQUAL SOLID LID W/ RAISED LETTERING READING "STORM SEWER" SEE DETAIL STM-10

MIN. 1 AND MAX 4 ADJUSTING RINGS. TWO CONCENTRIC BEADS OF CONSTRUCTION ADHESIVE, PL-500 OR APPROVED EQUAL, USED BETWEEN RINGS AND TO SEAL RINGS TO STRUCTURE



SECTION
(NO SCALE)

NOTES: 1. MANHOLE SHALL BE CONSTRUCTED CONSISTENT WITH CITY STANDARDS SEE DETAIL STM-03

D= TREATMENT MH DIA.	6'	8'	*8'+
d= INTERNAL PIPE DIA.	18"	24"	24"+
H= SUMP DEPTH	5'	6'	6'+
MAX IMPERVIOUS AREA	5AC	10AC	>10AC*
MAX STORM SEWER SIZE	18"	24"	>24"

*NOTE: OFFLINE CUSTOM DESIGN REQUIRED

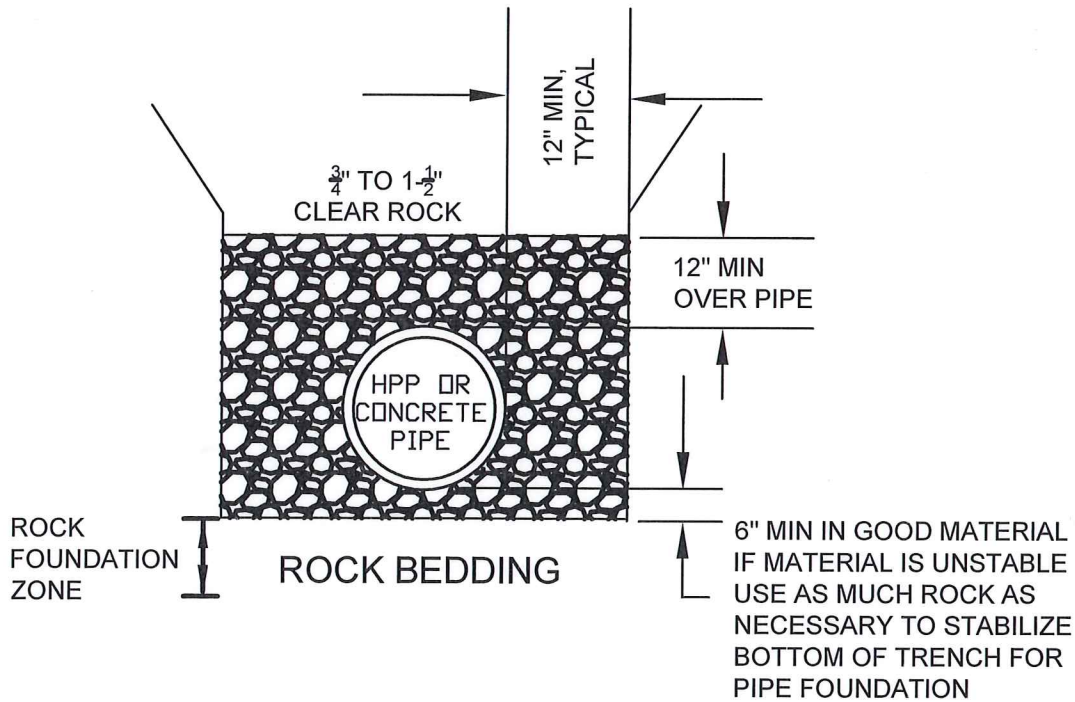
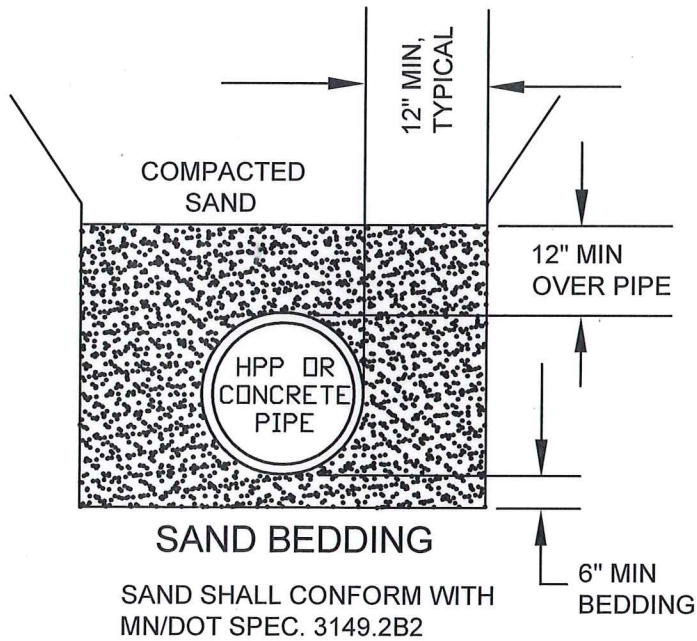
STANDARD
DETAIL NO.
STM-13

**ENVIRONMENTAL
MANHOLE
(EXISTING STORM SEWER)**

APPROVAL *12/16* 20 *14*
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CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION





NOTE: 1. BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE PIPE UNLESS MODIFIED IN THE CONTRACT DOCUMENTS. BEDDING REQUIRED FOR ALL MAINS AND SERVICES.

STANDARD
DETAIL NO.
STM-14

STORM SEWER BEDDING

APPROVAL 12/16 2014

CITY ENGINEER

CITY OF RICHFIELD
ENGINEERING DIVISION

